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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,114	06/14/2001	Dennis H. Locke		7922

7590

04/18/2003

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EXAMINER

PHAM, LEDA T

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/881,114

Applicant(s)

LOCKE, DENNIS H.

Examiner

Leda T. Pham

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Response to Amendment*

1. This office action is in response to Amendment filed on 02/10/03.
2. Claims 1 – 22 are presented for examination.

In view of amendment, the examiner withdraws the objections to the abstract.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 2, 6 – 9, 11, 15 – 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Bramm et al. (4,763,032).

Bramm teaches an apparatus (figure 1) comprising a rotor (1), a stator (5), first and second axially spaced combinations each including at least one permanent magnet (18, 17) disposed on each of said rotor (1) and said stator (5) and polarized to levitate said rotor and further including an electrically energizable coil (19) for modulating magnetic flux between said respective stator and rotor magnets, electrical circuitry (7) for regulating electrical energy to said coils for stabilizing said rotor axially, and said rotor magnets being offset axially of said stator magnets respectively such that said rotor magnets are offset axially inwardly of said corresponding stator magnets or such that said rotor magnets are offset axially outwardly of said corresponding stator magnets (figure 2).

Referring to claim 2, Bramm teaches the electrical circuitry (figure 1) includes a first circuit for regulating electrical energy to said coils (7) for maintaining an axial reference position of said rotor (1) and a second circuit responsive to feed-back of electrical energy to at least one of said coils for modifying said axial reference position (9).

Referring to claim 6, Bramm teaches the apparatus wherein said rotor magnets are offset axially outwardly of said stator magnets respectively.

Referring to claim 7, Bramm teaches the apparatus wherein said rotor magnets are magnetized to repel said stator magnets respectively (figure 2).

Referring to claim 8, Bramm teaches the apparatus wherein said magnets are axially polarized (figure 2).

Referring to claim 9, Bramm teaches the apparatus wherein said magnets (17, 18) are magnet rings (figure 1).

Referring to claim 11, Bramm teaches the apparatus wherein said coil (19) is positioned on said stator (figure 1).

Referring to claim 15, Bramm teaches apparatus (figure 1) comprising a rotor (1), a stator (5), first and second axially spaced combinations each including at least one permanent magnet (18, 17) disposed on each of said rotor (1) and said stator (5) and polarized to levitate said rotor and further including an electrically energizable coil (19) for modulating magnetic flux between said respective stator and rotor magnets, a first electrical circuit (7) for regulating electrical energy to said coils for maintaining a reference position of said rotor, and a second electrical circuit (9) responsive to feed-back of electrical energy to at least one of said coils for modifying said reference position.

Referring to claim 16, Bramm teaches the apparatus wherein said rotor magnets (18) are offset axially outwardly of said stator magnets (17) respectively.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 – 5, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bramm in view of Prem (U.S. Patent No. 5,928,131).

Bramm substantially discloses the apparatus having the electrical circuitry including the first circuit and the second circuit, and the second circuit comparing electrical energy to at least one of said coils with a reference electrical energy and an integrator of the differences, but he does not clearly show the second circuit including a comparator.

Prem in figure 5 discloses a magnetically suspended fluid pump and control system having a comparator (119) for detecting and controlling the sign of the sine wave.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit in Bramm's apparatus having the comparator as taught by Prem. Doing so would provide the comparator for comparing electrical energy to at least one of said coils with a reference electrical energy and an integrator of the differences.

Referring to claim 4, Bramm discloses the said reference electrical energy is about zero volts (0.1 W).

Referring to claim 5, Prem discloses wherein said circuitry includes a rotor position sensor (417), a comparator (119) for outputting a difference signal between a signal from said sensor and a position reference signal, and a PID controller for receiving said difference signal and outputting electrical energy to said coils in response to said difference signal.

Referring to claim 17, Prem discloses the apparatus wherein said second circuit includes a comparator (119) for comparing electrical energy to at least one of said coils with a reference electrical energy and further includes an integrator of the differences.

Referring to claim 18, Bramm disclosed wherein said reference electrical energy is about zero volts.

7. Claims 10, 12 – 14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bramm in view of Chen (U.S. Patent No. 6,201,329 B1).

Referring to claim 10, Bramm teaches the claim invention, except for the added limitation of each of said combinations comprises two of said rotor magnet, and two of said stator magnet.

Chen teaches the apparatus wherein each of said combinations comprises two of said rotor magnet which are polarized axially in opposite directions and two of said stator magnet which are polarized axially in opposite directions (figure 8) for reducing the rotor vibration during rotation and increasing sufficiently rigid.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the number of rotor magnet and stator magnet as taught by Chen. Doing so would reduce the rotor vibration during rotation and increase sufficiently rigid.

Referring to claim 12, Chen teaches the apparatus further comprising magnetic material in surrounding relation to said coil (figure 3).

Referring to claim 13, Bramm teaches the apparatus wherein said coil (19) is positioned on said stator (figure 1), the apparatus further comprising means (sensors) defining an air gap between said magnetic material and said respective stator magnet.

Referring to claim 14, Chen teaches the apparatus further comprising magnetic material disposed alongside said stator magnet (figure 10).

Referring to claim 19, Chen teaches the apparatus wherein said coil (92, 94) is positioned on said stator (figure 3), the apparatus further comprising magnetic material (50, 51) in surrounding relation to said coil (92, 94), means defining an air gap (56, 60, 64, 68, and 72) between said magnetic material and said respective stator magnet, and magnetic material (466) disposed alongside said stator magnet (454, figure 10).

With regard to claims 20 – 22 the method of bearing a rotor would be inherent and obvious since the prior art references meet the structural limitations of the claimed device.

#### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1, 15, and 20 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leda T. Pham whose telephone number is (703) 305-4864. The examiner can normally be reached on M-F (7:30-5:00) first Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9176 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

Leda T. Pham  
Examiner  
Art Unit 2834

LTP  
April 14, 2003

  
NESTOR RAMIREZ  
SUPERVISOR  
APR 14 2003